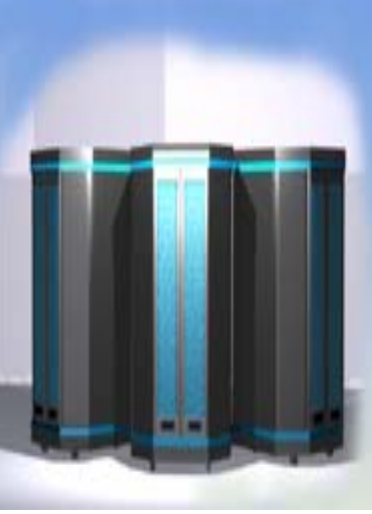

High Performance Computing Software

JPL Internal Seminar Series

The Cascade programming and execution model: A first approach

Dr. Hans P. Zima

Thursday, October 17, 2002

12:00 noon – 1:00 p.m.

Building 126, Room 225

The cascade architecture is currently being designed in the study phase of a DARPA funded HPCS project led by Cray. Salient features of the architecture include a hierarchical structure, a shared virtual memory with different addressing modes, and possibly smart memory. In this talk we outline a first approach towards a programming and execution model for cascade, which is being developed in a cooperative effort involving JPL and Cray. Programs will be initially written in a basic parallel model characterized by a large number of threads in a flat shared virtual memory. An extended version of this model will allow the exploitation of data locality and data/thread affinity in parallel algorithms, if required by performance considerations. The long-term goal is to isolate the user as much as possible from the idiosyncrasies of the hardware by providing a sophisticated set of software tools that support largely autonomous system operation and program tuning. This will be supported by a range of advanced architectural features.

For questions, please contact Larry Bergman at 3-5314.